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XXXVI. *Remarks and Considerations relative to the Performance of Amputation above the Knee, by the single circular Incision.* By Benjamin Gooch, Surgeon at Norwich.

Redkle, May 19, 1775. **I**N April, 1774, I was asked, in consultation with several other surgeons, in the case of a bad leg, in a lad of about fifteen years of age, belonging to the Belchamp-house of Industry, in the county of Suffolk. The propriety of the operation above the knee was indisputable; and the single, instead of the double, incision, which I propounded to the consideration of my brethren, was unanimously assented to, and done in the following manner.

After drawing up the teguments as far as could be done, fixing them tight and very exactly with a narrow band^(a), before straitening the tourniquet ligature, the operation was performed by Mr. REVANS, of Halefworth, who made the incision quick and with great exactness, quite round to the bone, steadily at once; rather lower posteriorly and internally than anteriorly and externally, as the

(a) The band may be about an inch broad, made of firm linen cloth or thin leather, spread with common plaster; and in order to increase its power, it may have a slit in the middle, and be used like the uniting bandage.

band directed, in consideration of the different attachment of the muscles. These were then carefully dissected from the *periosteum*, and drawn up with the retractor, as I formerly described; so that after the use of the saw, the end of the bone was lodged full two inches in the muscles^(b). This manner of operation succeeded to our wish; leaving a flat, even stump, which was completely cicatrized in less than two months; and with but little exfoliation from the bones, as Mr. REVANS informed me: since that, he assured me, that it was the best stump he had ever seen, which he ascribed to the manner of amputating, and the treatment afterwards.

The following method in this case was used to keep down the teguments and muscles, during the cure of the stump, which I have practised more than forty years, much to my own satisfaction, and the approbation of many of my brethren. As soon as the tension is over, and the wound well digested, I apply a circular plaster, moderately adhesive, four or five inches broad, with great exactness, near to the edge of the wound; and then

(b) See Chapter upon Amputations in my Cases and Remarks in Surgery, edit. 2.; and what M. LOUIS says upon this subject, in the Mem. de l'Acad. Roy. de Chirurgie, tom. II. et IV. In the latter of which, this eminent surgeon mentions his having had compression successfully made upon the crural artery in the groin, in some amputations that he performed, where there was not room to apply the tourniquet to the thigh. The celebrated M. PETIT, many years ago, preserved the life of a gentleman, by inventing a machine to serve such a purpose, on account of a hæmorrhage, twenty-one days after having had his thigh amputated higher up than ordinary.

affix to the whole breadth of it, at due distances, fix straight straps of the same kind of plaster, of suitable dimensions, with slits in half of them, for their opposites to be passed through over the necessary dressings; and an easy well-adapted compress of a sufficient thickness, having a piece of stiff paper on the outside of it; directing an assistant to thrust gently and evenly down, with both hands, the teguments and muscles, whilst I draw the straps properly strait, and secure the ends of them when reflected, with a narrower circular plaster. All this can be easily removed, and occasionally renewed at the time of dressing, letting the other circular plaster remain without renewal, as long as its adhesion effectually answers the purpose. And after proceeding in this manner, I generally find a cap sufficient, without any bandage (*c*).

This is not the only instance in which I have had good reason to approve the single incision; and should it be found, by sufficient experience, to answer the end in general, but as well as the double, in preventing a conical stump (*d*), as mentioned in my Cases and Remarks in Surgery, it will indisputably deserve the preference; and though, from what I have observed, there seldom is much projection of the bone attending the double incision,

(*c*) When I made some remarks upon amputation formerly, I should have advised this method, from its great utility experienced in many instances.

(*d*) I have been informed, by good authority, that a resection of the bone is no uncommon practice at Paris, to remedy this inconvenience.

when it has been properly made, and the cure of the wound judiciously conducted; yet I have sometimes observed, notwithstanding the utmost judgement and attention, some appearance of want of muscular substance to form a well-shaped stump. And in whatever method an amputation has been performed, a very strait bandage should by all means be avoided in the subsequent treatment of the wound, for obvious reasons; namely, because it obstructs circulation, and is an impediment to nutrition. The condition of the patient, the state of the limb, and the part of it where the operation is sometimes found absolutely necessary to be performed, with other concurring circumstances may prevent the formation of a good stump under the most skilful management, whether the single or double incision was practised, according as the surgeon shall find reason to determine his choice, by duly exercising his judgement in this nice point. Considering the different degrees of attachment and adhesion of the muscles, by means of the cellular membrane, if kept firmly together with the strait narrow band, as has been described, it is evident, they will be more evenly and regularly divided by the single than by the double incision; for when the muscles are laid bare, if a stimulus of any kind is applied to their fibres, it is evident, they will contract more or less, according to their different attachments, and different degrees of irritability: and for this reason an even section will not easily be effected, unless the whole incision

sion be made at once, and as it were in an instant, so as not to allow sufficient time for the irritation of the knife to take effect upon the bare muscles (e).

(e) See two Dissertations, lately published by my ingenious friend Dr. KIRKLAND, of Ashby de la Zouch; the one upon the Brain and Nerves; and the other on the Sympathy of the Nerves, and Irritability. I am also inclined to think, and not without the authority of experience, that amputation below the knee, by the single incision, may be found preferable; observing what has been mentioned, and cutting the *gastrocnemius* muscle a little shorter than the other muscles, as Mr. SHARP directs in his *Chirurgical Operations*.